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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/311,480	05/13/1999	WEI-KUO LEE	D-17965	1296

29423 7590 10/24/2002

WHYTE HIRSCHBOECK DUDEK S.C.
111 E. WISCONSIN AVE, SUITE 2100
MILWAUKEE, WI 53202

EXAMINER

KRUER, KEVIN R

ART UNIT	PAPER NUMBER
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1773

DATE MAILED: 10/24/2002

17

Please find below and/or attached an Office communication concerning this application or proceeding.

AS-17

Office Action Summary	Application No.	Applicant(s)	
	09/311,480	LEE ET AL.	
	Examiner	Art Unit	
	Kevin R Kruer	1773	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#17

Status

- 1) ☐ Responsive to communication(s) filed on _____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413) Paper No(s). <u>16</u> . |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____. | 6) <input type="checkbox"/> Other: |

DETAILED ACTION

The finality of Paper #8, mailed October 10, 2001, has been removed and prosecution has been reopened. The following is an action based upon the pending claims in the applications. For clarity of record, the examiner notes that the clean version of claims 1-9 filed May 24, 2001 are pending. The clean version of claims 1-9 filed May 24, 2001 are identical to originally filed claims 1-9. Claim 10 was canceled in the After Final amendment filed April 3, 2002.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claims 1, 7, and 9, the phrase "based on the weight of the copolymer or a silicon rubber" is indefinite. It is unclear whether (a) the amount of acrylonitrile is based upon the copolymer or silicon rubber or (b) the composition may optionally contain a nitrile rubber or a silicone rubber. In claims 3 and 7, the phrase "and methacrylic acid esters wherein the ester is present in the copolymer in an amount of about 20 to about 55 percent by weight" is indefinite. It is unclear whether (a) if a methacrylate is used, then the ester is present in the copolymer in an amount of about 20 to about 55 percent by weight, or (b) the ester is present in the copolymer in an amount of about 20 to about 55 percent by weight regardless of which copolymer is utilized. The preamble of claim 7 is unclear. Applicant claims "one or more" or "two or more." This seems repetitive since "one or more" is inclusive of "two or more." Furthermore, Applicant claims communication media or electrical conductors "a core" in some embodiments but not in others. However, since every embodiment must be "surrounded" by the claimed layer, would this mean all embodiments have a core? In claim 10, applicant claims carbon nanotubes "per

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100 parts by weight of polymer.” There is insufficient antecedent basis for “of polymer” in the claim.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 2, and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admissions in view of Nahass et al. (US 5,591,382). Applicant admits that a typical electrical power cable generally comprises one or more conductors in a cable core that is surrounded by several layers of polymeric materials. Those layers include a first semiconducting shield layer, an insulating layer, a second semiconducting shield layer, a metallic tape or wire shield and a protective jacket. Typical strippable shield compositions contain a polyolefin, such as ethylene/vinyl acetate (EVA) with a high vinyl acetate content, conductive carbon black, and organic peroxide crosslinking agents. Carbon black is usually included in amounts of about 20 to about 60 percent by weight based upon the weight of the composition. Nitrile rubber may be added for the purpose of reducing the composition's strip force (see pages 1 and 2 of the specification).

Applicant does not admit that carbon fibrils are commonly added to semiconducting shield compositions. However, Nahass teaches that carbon fibrils have been used in place of carbon black in conductive compositions. Compared to carbon black, less carbon fibril is necessary to reach the desired conductivity. Furthermore, a polymer's tensile and flexural characteristics are enhanced when carbon fibrils are added (col 1, line 54- col 2, line 5).

Therefore, the examiner takes the position that it would have been obvious to utilize carbon fibrils in place of carbon black because less carbon fibril than carbon black is needed to reach the desired conductivity and the carbon fibrils increase the polymer's tensile and flexural characteristics.

3. Claims 1-5, 7, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ongchin (US 4,286,023) in view of Nahass et al. (US 5,591,382). Ongchin teaches an article of manufacture comprising one or more strands of a conducting metal or alloy, a layer of semiconductive shielding, a layer of insulation and a layer of strippable semi-conductive composition. The strippable semiconductive material comprises (A) an ethylene copolymer selected from the group consisting of an ethylene-alkyl acrylate copolymer containing from about 15-45wt% acrylate or ethylene vinyl acetate containing 15-60wt% acetate, (B) a nitrile rubber containing 10-50wt% acrylonitrile, (C) conductive carbon black, and (D) a peroxide crosslinking agent (col 2, lines 4-19). The ratio of (A) to (B) is between 9:1 and 1:9. The conductive carbon black is added in amounts of 10 to 150 parts per 100 parts of (A)+(B) (col 2, lines 19-26).

Ongchin does not teach that carbon fibrils may be added to the semiconducting shield compositions. However, Nahass teaches that carbon fibrils have been used in place of carbon black in conductive compositions. Compared to carbon black, less carbon fibril is necessary to reach the desired conductivity. Furthermore, a polymer's tensile and flexural characteristics are enhanced when carbon fibrils are added (col 1, line 54- col 2, line 5). Therefore, the examiner takes the position that it would have been obvious to utilize carbon fibrils in place of carbon black because less carbon fibril is needed to reach the desired conductivity and the carbon fibrils increase the polymer's tensile and flexural characteristics.

With respect to claims 5, 7, and 9, neither Ongchin nor Nahass teaches that carbon black and carbon fibrils may be utilized together in a semiconducting shield composition. However,

the courts have held that it is prima facie obvious to combine two or more compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the very same purpose. The idea of combining them flows logically from their having been individually taught in the prior art. *In re Kerkhoven* 626, F.2d 846, 850, 205 USPQ 1069, 1072 (CCPA 1980). Therefore, the examiner takes the position that it would have been obvious to one of ordinary skill in the art to utilize both carbon black and carbon fibrils in the same semiconducting shielding composition because Nahass teaches both fillers are used analogously/interchangeably in conductive compositions.

Furthermore, the courts have held that "When the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). Nahass teaches that carbon black has been utilized as electrically conductive filler because of its low cost and its resulting uniform electrical conductivity (col 1, lines 27-40). Carbon fibrils have been utilized as conductive fillers because less carbon fibril than carbon black is necessary to reach a desired conductivity and a polymer's tensile and flexural characteristics are enhanced when carbon fibrils are added (col 1, line 54- col 2, line 5). Therefore, it would have been obvious to optimize the relative amounts of carbon black and carbon fibrils in order to obtain uniform electrical conductivity, the desired conductivity, the desired tensile and flexural characteristics, and to control cost.

4. Claims 1, 6, 8, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ongchin (US 4,286,023) in view of Silver et al. (US 4,317,001) and Nahass et al. (US 5,591,382). Ongchin teaches an article of manufacture comprising one or more strands of a conducting metal or alloy, a layer of semiconductive shielding, a layer of polyethylene insulation and a layer of strippable semi-conductive composition. The strippable semiconductive material comprises (A) an ethylene copolymer selected from the group consisting of an ethylene-alkyl

acrylate copolymer containing from about 15-45wt% acrylate or ethylene vinyl acetate containing 15-60wt% acetate, (B) a nitrile rubber containing 10-50wt% acrylonitrile, (C) conductive carbon black, and (D) a peroxide crosslinking agent (col 2, lines 4-19). The ratio of (A) to (B) is between 9:1 and 1:9. The conductive carbon black is added in amounts of 10 to 150 parts per 100 parts of (A)+(B) (col 2, lines 19-26).

Ongchin does not teach that the insulation layer should comprise conductive filler. However, Silver teaches an insulation layer for an electric cable wherein the insulative layer should have a volume resistivity of at least the order of 10^{10} ohm*cm. In order to obtain such a resistivity, conductive particles (e.g., carbon black) may be added to the insulating composition in amounts of less than 2.5wt% (col 1, lines 18-41). Therefore, it would have been obvious to add low amounts of a conductive particle to the polyethylene insulative layer taught by Ongchin in order to obtain the desired volume resistivity.

Neither Ongchin nor Silver teaches that carbon fibrils should be utilized as the conductive filler added to the insulating layer. However, Silver teaches the addition of carbon black conductive fillers to insulative layers. Furthermore, Nahass teaches that carbon fibrils have been used in place of carbon black as conductive filler and that the addition of carbon fibrils to polymers can be used to enhance the tensile and flexural characteristics of the polymer to which they are added (col 1, line 54- col 2, line 5). Thus, it would have been obvious to one of ordinary skill in the art to utilize carbon fibril as the conductive filler in the insulation layer taught by Ongchin because carbon fibrils and carbon black have been utilized interchangeably in the art as electrically conductive fillers and because carbon fibrils would increase the tensile and flexural characteristics of the insulation layer.

5. Claims 1-5, 7, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 0420271A1 (herein referred to as "Burns") in view of Nahass et al. (US 5,591,382). Burns teaches an insulated electrical conductor comprising one or more strands of a conducting metal

or alloy, a layer of semiconductive shielding, a layer of insulation and a layer of strippable semiconductive composition (page 2, lines 6-12). The strippable semiconductive material comprises (A) 40-65wt% an ethylene-vinyl acetate copolymer containing 27-45wt% acetate, (B) 5-30wt% nitrile rubber containing 25-55wt% acrylonitrile, (C) 25-45wt% conductive carbon black, and (D) a peroxide crosslinking agent (page 3, lines 15-22).

Burns does not teach that the carbon black of the semiconducting shield composition may be substituted with carbon fibrils. However, Nahass teaches that carbon fibrils have been used in place of carbon black in conductive compositions. Compared to carbon black, less carbon fibril is necessary to reach the desired conductivity. Furthermore, a polymer's tensile and flexural characteristics are enhanced when carbon fibrils are added (col 1, line 54- col 2, line 5). Therefore, the examiner takes the position that it would have been obvious to utilize carbon fibrils in place of carbon black because less carbon fibril than carbon black is needed to reach the desired conductivity and the carbon fibrils increase the polymer's tensile and flexural characteristics.

With respect to claims 5, 7, and 9, neither Burns nor Nahass teaches that carbon black and carbon fibrils may be utilized together in a semiconducting shield composition. However, the courts have held that it is prima facie obvious to combine two or more compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the very same purpose. The idea of combining them flows logically from their having been individually taught in the prior art. *In re Kerkhoven* 626, F.2d 846, 850, 205 USPQ 1069, 1072 (CCPA 1980). Therefore, the examiner takes the position that it would have been obvious to one of ordinary skill in the art to utilize both carbon black and carbon fibrils in the same semiconducting shielding composition because Nahass teaches both fillers are used analogously/interchangeably in conductive compositions.

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Furthermore, the courts have held that "When the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). Nahass teaches that carbon black has been utilized as electrically conductive filler because of its low cost and its resulting uniform electrical conductivity (col 1, lines 27-40). Carbon fibrils have been utilized as conductive fillers because less carbon fibril than carbon black is necessary to reach a desired conductivity and a polymer's tensile and flexural characteristics are enhanced when carbon fibrils are added (col 1, line 54- col 2, line 5). Therefore, it would have been obvious to optimize the relative amounts of carbon black and carbon fibrils in order to obtain uniform electrical conductivity, the desired conductivity, the desired tensile and flexural characteristics, and to control cost.

Conclusion

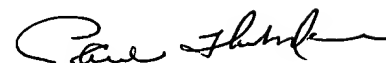
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin R. Kruer whose telephone number is (703) 305-0025. The examiner can normally be reached on Monday-Friday from 7:00 a.m. to 4:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Thibodeau, can be reached on (703) 308-2367. The fax phone number for the organization where this application or proceeding is assigned is (703)305-5436.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0661.



Kevin R. Kruer
Patent Examiner



Paul Thibodeau
Supervisory Patent Examiner
Technology Center 1700